PCT09

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:18

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

Does Not Comply
Corrected Diskette Needed

```
 4 <110> APPLICANT: The President and Fellows of Harvard College
 6 <120> TITLE OF INVENTION: REGULATION OF BIOFILM FORMATION
 9 <130> FILE REFERENCE: 00246/505003
11 <140> CURRENT APPLICATION NUMBER: 09/673,605A
12 <141> CURRENT FILING DATE: 2000-10-17
14 <150> PRIOR APPLICATION NUMBER: 60/102,870
15 <151> PRIOR FILING DATE: 1998-10-02
17 <150> PRIOR APPLICATION NUMBER: 60/083,259
18 <151> PRIOR FILING DATE: 1998-04-27
20 <160> NUMBER OF SEQ ID NOS: 49
22 <170> SOFTWARE: FastSEQ for Windows Version 4.0
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ERRORED SEQUENCES

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690 <210> SEQ ID NO: 34
691 <211> LENGTH: 595
692 <212> TYPE: PRT
693 <213> ORGANISM: Escherichia coli
695 <400> SEQUENCE: 34
696 Met Ala Gln Val Ile Asn Thr Asn Ser Leu Ser Leu Ile Thr Gln Asn
E--> 697  1               5                  10                  15
698 Asn Ile Asn Lys Asn Gln Ser Ala Leu Ser Ser Ser Ile Glu Arg Leu
699             20                  25                  30
700 Ser Ser Gly Leu Arg Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Gln
701         35                  40                  45
702 Ala Ile Ala Asn Arg Phe Thr Ser Asn Ile Lys Gly Leu Thr Gln Ala
703     50                  55                  60
704 Ala Arg Asn Ala Asn Asp Gly Ile Ser Val Ala Gln Thr Thr Glu Gly
705 65                  70                  75                  80
706 Ala Leu Ser Glu Ile Asn Asn Asn Leu Gln Arg Ile Arg Glu Leu Thr
707                 85                  90                  95
708 Val Gln Ala Ser Thr Gly Thr Asn Ser Asp Ser Asp Leu Asp Ser Ile
709             100                 105                 110
710 Gln Asp Glu Ile Lys Ser Arg Leu Asp Glu Ile Asp Arg Val Ser Gly
711         115                 120                 125
712 Gln Thr Gln Phe Asn Gly Val Asn Val Leu Ala Lys Asp Gly Ser Met
713     130                 135                 140
714 Lys Ile Gln Val Gly Ala Asn Asp Gly Gln Thr Ile Thr Ile Asp Leu
715 145                 150                 155                 160
716 Lys Lys Ile Asp Ser Asp Thr Leu Gly Leu Asn Gly Phe Asn Val Asn
717                 165                 170                 175
718 Gly Ser Gly Thr Ile Ala Asn Lys Ala Ala Thr Ile Ser Asp Leu Thr
```

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
719                 180                 185                 190
720 Ala Ala Lys Met Asp Ala Ala Thr Asn Thr Ile Thr Thr Thr Asn Asn
721         195                 200                 205
722 Ala Leu Thr Ala Ser Lys Ala Leu Asp Gln Leu Lys Asp Gly Asp Thr
723     210                 215                 220
724 Val Thr Ile Lys Ala Asp Ala Ala Gln Thr Ala Thr Val Tyr Thr Tyr
725 225                 230                 235                 240
726 Asn Ala Ser Ala Gly Asn Phe Ser Phe Ser Asn Val Ser Asn Asn Thr
727                 245                 250                 255
728 Ser Ala Lys Ala Gly Asp Val Ala Ala Ser Leu Leu Pro Pro Ala Gly
729             260                 265                 270
730 Gln Thr Ala Ser Gly Val Tyr Lys Ala Ala Ser Gly Glu Val Asn Phe
731         275                 280                 285
732 Asp Val Asp Ala Asn Gly Lys Ile Thr Ile Gly Gly Gln Glu Ala Tyr
733     290                 295                 300
734 Leu Thr Ser Asp Gly Asn Leu Thr Thr Asn Asp Ala Gly Gly Ala Thr
735 305                 310                 315                 320
736 Ala Ala Thr Leu Asp Gly Leu Phe Lys Lys Ala Gly Asp Gly Gln Ser
737                 325                 330                 335
738 Ile Gly Phe Asn Lys Thr Ala Ser Val Thr Met Gly Gly Thr Thr Tyr
739             340                 345                 350
740 Asn Phe Lys Thr Gly Ala Asp Ala Gly Ala Ala Thr Ala Asn Ala Gly
741         355                 360                 365
742 Val Ser Phe Thr Asp Thr Ala Ser Lys Glu Thr Val Leu Asn Lys Val
743     370                 375                 380
744 Ala Thr Ala Lys Gln Gly Thr Ala Val Ala Ala Asn Gly Asp Thr Ser
745 385                 390                 395                 400
746 Ala Thr Ile Thr Tyr Lys Ser Gly Val Gln Thr Tyr Gln Ala Val Phe
747                 405                 410                 415
748 Ala Ala Gly Asp Gly Thr Ala Ser Ala Lys Tyr Ala Asp Asn Thr Asp
749             420                 425                 430
750 Val Ser Asn Ala Thr Ala Thr Tyr Thr Asp Ala Asp Gly Glu Met Thr
751         435                 440                 445
752 Thr Ile Gly Ser Tyr Thr Thr Lys Tyr Ser Ile Asp Ala Asn Asn Gly
753     450                 455                 460
754 Lys Val Thr Val Asp Ser Gly Thr Gly Ser Gly Lys Tyr Ala Pro Lys
755 465                 470                 475                 480
756 Val Gly Ala Glu Val Tyr Val Ser Ala Asn Gly Thr Leu Thr Thr Asp
757                 485                 490                 495
758 Ala Thr Ser Glu Gly Thr Val Thr Lys Asp Pro Leu Lys Ala Leu Asp
759             500                 505                 510
760 Glu Ala Ile Ser Ser Ile Asp Lys Phe Arg Ser Ser Leu Gly Ala Ile
761         515                 520                 525
762 Gln Asn Arg Leu Asp Ser Ala Val Thr Asn Leu Asn Asn Thr Thr Thr
763     530                 535                 540
764 Asn Leu Ser Glu Ala Gln Ser Arg Ile Gln Asp Ala Asp Tyr Ala Thr
765 545                 550                 555                 560
766 Glu Val Ser Asn Met Ser Lys Ala Gln Ile Ile Gln Gln Ala Gly Asn
E--> 767
```

565 570 575 Ser Val Leu Ala Lys Ala Asn Gln

insert hard return

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
769 <210> SEQ ID NO: 35
770 <211> LENGTH: 119
771 <212> TYPE: PRT
772 <213> ORGANISM: Escherichia coli
774 <400> SEQUENCE: 35
775 Met Gly Ile Met His Thr Ser Glu Leu Leu Lys His Ile Tyr Asp Ile
776  1               5                  10                  15
777 Asn Leu Ser Tyr Leu Leu Leu Ala Gln Arg Leu Ile Val Gln Asp Lys
778             20                  25                  30
779 Ala Ser Ala Met Phe Arg Leu Gly Ile Asn Glu Glu Met Ala Thr Thr
780         35                  40                  45
781 Leu Ala Ala Leu Thr Leu Pro Gln Met Val Lys Leu Ala Glu Thr Asn
782     50                  55                  60
783 Gln Leu Val Cys His Phe Arg Phe Asp Ser His Gln Thr Ile Thr Gln
784 65                  70                  75                  80
785 Leu Thr Gln Asp Ser Arg Val Asp Asp Leu Gln Gln Ile His Thr Gly
E--> 786
            85                  90                  95 Ile Met Leu Ser Thr Arg Leu Leu
788 <210> SEQ ID NO: 36
789 <211> LENGTH: 295
790 <212> TYPE: PRT
791 <213> ORGANISM: Escherichia coli
793 <400> SEQUENCE: 36
794 Met Leu Ile Leu Leu Gly Tyr Leu Val Val Leu Gly Thr Val Phe Gly
795  1               5                  10                  15
796 Gly Tyr Leu Met Thr Gly Gly Ser Leu Gly Ala Leu Tyr Gln Pro Ala
797             20                  25                  30
798 Glu Leu Val Ile Ile Ala Gly Ala Gly Ile Gly Ser Phe Ile Val Gly
799         35                  40                  45
800 Asn Asn Gly Lys Ala Ile Lys Gly Thr Leu Lys Ala Leu Pro Leu Leu
801     50                  55                  60
802 Phe Arg Arg Ser Lys Tyr Thr Lys Ala Met Tyr Met Asp Leu Leu Ala
803 65                  70                  75                  80
804 Leu Leu Tyr Arg Leu Met Ala Lys Ser Arg Gln Met Gly Met Phe Ser
805                 85                  90                  95
E--> 806 Leu Glu Arg Asp Ile Glu Asn Pro Arg Glu Ser Glu Ile Phe Ala Ser
807             100                 105                 110
808 Tyr Pro Arg Ile Leu Ala Asp Ser Val Met Leu Asp Phe Ile Val Asp
809         115                 120                 125
810 Tyr Leu Arg Leu Ile Ile Ser Gly His Met Asn Thr Phe Glu Ile Glu
811     130                 135                 140
812 Ala Leu Met Asp Glu Glu Ile Glu Thr His Glu Ser Glu Ala Glu Val
813 145                 150                 155                 160
814 Pro Ala Asn Ser Leu Ala Leu Val Gly Asp Ser Leu Pro Ala Phe Gly
815                 165                 170                 175
816 Ile Val Ala Ala Val Met Gly Val Val His Ala Leu Gly Ser Ala Asp
817             180                 185                 190
818 Arg Pro Ala Ala Glu Leu Gly Ala Leu Ile Ala His Ala Met Val Gly
819         195                 200                 205
820 Thr Phe Leu Gly Ile Leu Leu Ala Tyr Gly Phe Ile Ser Pro Leu Ala
```

same

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
821     210                 215                 220
822 Thr Val Leu Arg Gln Lys Ser Ala Glu Thr Ser Lys Met Met Gln Cys
823 225                 230                 235                 240
824 Val Lys Val Thr Leu Leu Ser Asn Leu Asn Gly Tyr Ala Pro Pro Ile
825                 245                 250                 255
826 Ala Val Glu Phe Gly Arg Lys Thr Leu Tyr Ser Ser Glu Arg Pro Ser
E--> 827
        260                 265                 270
Phe Ile Glu Leu Glu Glu His Val
829 <210> SEQ ID NO: 37
830 <211> LENGTH: 308
831 <212> TYPE: PRT
832 <213> ORGANISM: Escherichia coli
834 <400> SEQUENCE: 37
835 Met Lys Asn Gln Ala His Pro Ile Ile Val Val Lys Arg Arg Lys Ala
836  1               5                  10                  15
837 Lys Ser His Gly Ala Ala His Gly Ser Trp Lys Ile Ala Tyr Ala Asp
838             20                  25                  30
839 Phe Met Thr Ala Met Met Ala Phe Phe Leu Val Met Trp Leu Ile Ser
840         35                  40                  45
841 Ile Ser Ser Pro Lys Glu Leu Ile Gln Ile Ala Glu Tyr Phe Arg Thr
842     50                  55                  60
843 Pro Leu Ala Thr Ala Val Thr Gly Gly Asp Arg Ile Ser Asn Ser Glu
844 65                  70                  75                  80
845 Ser Pro Ile Pro Gly Gly Gly Asp Asp Tyr Thr Gln Ser Gln Gly Glu
846                 85                  90                  95
847 Val Asn Lys Gln Pro Asn Ile Glu Glu Leu Lys Lys Arg Met Glu Gln
848             100                 105                 110
849 Ser Arg Leu Arg Lys Leu Arg Gly Asp Leu Asp Gln Leu Ile Glu Ser
850         115                 120                 125
851 Asp Pro Lys Leu Arg Ala Leu Arg Pro His Leu Lys Ile Asp Leu Val
852     130                 135                 140
853 Gln Glu Gly Leu Arg Ile Gln Ile Ile Asp Ser Gln Asn Arg Pro Met
854 145                 150                 155                 160
855 Phe Arg Thr Gly Ser Ala Asp Val Glu Pro Tyr Met Arg Asp Ile Leu
856                 165                 170                 175
857 Arg Ala Ile Ala Pro Val Leu Asn Gly Ile Pro Asn Arg Ile Ser Leu
858             180                 185                 190
859 Ser Gly His Thr Asp Asp Phe Pro Tyr Ala Ser Gly Glu Lys Gly Tyr
860         195                 200                 205
861 Ser Asn Trp Glu Leu Ser Ala Asp Arg Ala Asn Ala Ser Arg Arg Glu
862     210                 215                 220
863 Leu Met Val Gly Gly Leu Asp Ser Gly Lys Val Leu Arg Val Val Gly
864 225                 230                 235                 240
865 Met Ala Ala Thr Met Arg Leu Ser Asp Arg Gly Pro Asp Asp Ala Val
866                 245                 250                 255
867 Asn Arg Arg Ile Ser Leu Leu Val Leu Asn Lys Gln Ala Glu Gln Ala
868             260                 265                 270
E--> 869 Ile Leu His Glu Asn Ala Glu Ser Gln Asn Glu Pro Val Ser Ala Leu
E--> 870
       275                 280                 285
Glu Lys Pro Glu Val Ala Pro Gln
872 <210> SEQ ID NO: 38
```

RAW SEQUENCE LISTING DATE: 05/15/2002
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Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

873 <211> LENGTH: 245
874 <212> TYPE: PRT
875 <213> ORGANISM: Escherichia coli
877 <400> SEQUENCE: 38
878 Met Arg Arg Leu Leu Ser Val Ala Pro Val Leu Leu Trp Leu Ile Thr
879 1 5 10 15
880 Pro Leu Ala Phe Ala Gln Leu Pro Gly Ile Thr Ser Gln Pro Leu Pro
881 20 25 30
882 Gly Gly Gly Gln Ser Trp Ser Leu Pro Val Gln Thr Leu Val Phe Ile
883 35 40 45
884 Thr Ser Leu Thr Phe Ile Pro Ala Ile Leu Leu Met Met Thr Ser Phe
885 50 55 60
886 Thr Arg Ile Ile Ile Val Phe Gly Leu Leu Arg Asn Ala Leu Gly Thr
887 65 70 75 80
888 Pro Ser Ala Pro Pro Asn Gln Val Leu Leu Gly Leu Ala Leu Phe Leu
889 85 90 95
890 Thr Phe Phe Ile Met Ser Pro Val Ile Asp Lys Ile Tyr Val Asp Ala
891 100 105 110
892 Tyr Gln Pro Phe Ser Glu Glu Lys Ile Ser Met Gln Glu Ala Leu Glu
893 115 120 125
894 Lys Gly Ala Gln Pro Leu Arg Glu Phe Met Leu Arg Gln Thr Arg Glu
895 130 135 140
896 Ala Asp Leu Gly Leu Phe Ala Arg Leu Ala Asn Thr Gly Pro Leu Gln
897 145 150 155 160
898 Gly Pro Glu Ala Val Pro Met Arg Ile Leu Leu Pro Ala Tyr Val Thr
899 165 170 175
900 Ser Glu Leu Lys Thr Ala Phe Gln Ile Gly Phe Thr Ile Phe Ile Pro
901 180 185 190
902 Phe Leu Ile Ile Asp Leu Val Ile Ala Ser Val Leu Met Ala Leu Gly
903 195 200 205
904 Met Met Met Val Pro Pro Ala Thr Ile Ala Leu Pro Phe Lys Leu Met
E--> 905
210 215 220 Leu Phe Val Leu Val Asp Gly Trp

insert

907 <210> SEQ ID NO: 39
908 <211> LENGTH: 375
909 <212> TYPE: PRT
910 <213> ORGANISM: Escherichia coli
912 <400> SEQUENCE: 39
913 Met Ile Arg Leu Ala Pro Leu Ile Thr Ala Asp Val Asp Thr Thr Thr
914 1 5 10 15
915 Leu Pro Gly Gly Lys Ala Ser Asp Ala Ala Gln Asp Phe Leu Ala Leu
916 20 25 30
917 Leu Ser Glu Ala Leu Ala Gly Glu Thr Thr Thr Asp Lys Ala Ala Pro
918 35 40 45
919 Gln Leu Leu Val Ala Thr Asp Lys Pro Thr Thr Lys Gly Glu Pro Leu
920 50 55 60
921 Ile Ser Asp Ile Val Ser Asp Ala Gln Gln Ala Asn Leu Leu Ile Pro
922 65 70 75 80
923 Val Asp Glu Thr Pro Pro Val Ile Asn Asp Glu Gln Ser Thr Ser Thr
924 85 90 95

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
925 Pro Leu Thr Thr Ala Gln Thr Met Ala Leu Ala Ala Val Ala Asp Lys
926             100                 105                 110
927 Asn Thr Thr Lys Asp Glu Lys Ala Asp Asp Leu Asn Glu Asp Val Thr
928         115                 120                 125
929 Ala Ser Leu Ser Ala Leu Phe Ala Met Leu Pro Gly Phe Asp Asn Thr
930     130                 135                 140
931 Pro Lys Val Thr Asp Ala Pro Ser Thr Val Leu Pro Thr Glu Lys Pro
932 145                 150                 155                 160
933 Thr Leu Phe Thr Lys Leu Thr Ser Glu Gln Leu Thr Thr Ala Gln Pro
934                 165                 170                 175
935 Asp Asp Ala Pro Gly Thr Pro Ala Gln Pro Leu Thr Pro Leu Val Ala
936             180                 185                 190
937 Glu Ala Gln Ser Lys Ala Glu Val Ile Ser Thr Pro Ser Pro Val Thr
938         195                 200                 205
939 Ala Ala Ala Ser Pro Leu Ile Thr Pro His Gln Thr Gln Pro Leu Pro
940     210                 215                 220
E--> 941 Thr Val Ala Ala Pro Val Leu Ser Ala Pro Leu Gly Ser His Glu Trp
942 225                 230                 235                 240
943 Gln Gln Ser Leu Ser Gln His Ile Ser Leu Phe Thr Arg Gln Gly Gln
944                 245                 250                 255
945 Gln Ser Ala Glu Leu Arg Leu His Pro Gln Asp Leu Gly Glu Val Gln
946             260                 265                 270
947 Ile Ser Leu Lys Val Asp Asp Asn Gln Ala Gln Ile Gln Met Val Ser
948         275                 280                 285
949 Pro His Gln His Val Arg Ala Ala Leu Glu Ala Ala Leu Pro Val Leu
950     290                 295                 300
951 Arg Thr Gln Leu Ala Glu Ser Gly Ile Gln Leu Gly Gln Ser Asn Ile
952 305                 310                 315                 320
953 Ser Gly Glu Ser Phe Ser Gly Gln Gln Gln Ala Ala Ser Gln Gln Gln
954                 325                 330                 335
955 Gln Ser Gln Arg Thr Ala Asn His Glu Pro Leu Ala Gly Glu Asp Asp
E--> 956
      340                 345                 350
958 <210> SEQ ID NO: 40
959 <211> LENGTH: 547
960 <212> TYPE: PRT
961 <213> ORGANISM: Escherichia coli
963 <400> SEQUENCE: 40
964 Met Ser Ser Leu Ile Asn Asn Ala Met Ser Gly Leu Asn Ala Ala Gln
965  1               5                  10                  15
966 Ala Ala Leu Asn Thr Ala Ser Asn Asn Ile Ser Ser Tyr Asn Val Ala
967             20                  25                  30
968 Gly Tyr Thr Arg Gln Thr Thr Ile Met Ala Gln Ala Asn Ser Thr Leu
969         35                  40                  45
970 Gly Ala Gly Gly Trp Val Gly Asn Gly Val Tyr Val Ser Gly Val Gln
971     50                  55                  60
972 Arg Glu Tyr Asp Ala Phe Ile Thr Asn Gln Leu Arg Ala Ala Gln Thr
973 65                  70                  75                  80
974 Gln Ser Ser Gly Leu Thr Ala Arg Tyr Glu Gln Met Ser Lys Ile Asp
975                 85                  90                  95
```

Asp Thr Leu Pro Val Pro Val Ser

same

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: **US/09/673,605A** TIME: 15:51:19

Input Set : **A:\00246.505003.SEQLIST.TXT**
Output Set: **N:\CRF3\05152002\I673605A.raw**

```
976 Asn Met Leu Ser Thr Ser Thr Ser Ser Leu Ala Thr Gln Met Gln Asp
977                 100                 105                 110
978 Phe Phe Thr Ser Leu Gln Thr Leu Val Ser Asn Ala Glu Asp Pro Ala
979             115                 120                 125
980 Ala Arg Gln Ala Leu Ile Gly Lys Ser Glu Gly Leu Val Asn Gln Phe
981         130                 135                 140
982 Lys Thr Thr Asp Gln Tyr Leu Arg Asp Gln Asp Lys Gln Val Asn Ile
983 145                 150                 155                 160
984 Ala Ile Gly Ala Ser Val Asp Gln Ile Asn Asn Tyr Ala Lys Gln Ile
985                 165                 170                 175
986 Ala Ser Leu Asn Asp Gln Ile Ser Arg Leu Thr Gly Val Gly Ala Gly
987             180                 185                 190
988 Ala Ser Pro Asn Asn Leu Leu Asp Gln Arg Asp Gln Leu Val Ser Glu
989             195                 200                 205
990 Leu Asn Gln Ile Val Gly Val Glu Val Ser Val Gln Asp Gly Gly Thr
991         210                 215                 220
992 Tyr Asn Ile Thr Met Ala Asn Gly Tyr Ser Leu Val Gln Gly Ser Thr
993 225                 230                 235                 240
994 Ala Arg Gln Leu Ala Ala Val Pro Ser Ser Ala Asp Pro Ser Arg Thr
995                 245                 250                 255
996 Thr Val Ala Tyr Val Asp Gly Thr Ala Gly Asn Ile Glu Ile Pro Glu
997             260                 265                 270
998 Lys Leu Leu Asn Thr Gly Ser Leu Gly Gly Ile Leu Thr Phe Arg Ser
999             275                 280                 285
1000 Gln Asp Leu Asp Gln Thr Arg Asn Thr Leu Gly Gln Leu Ala Leu Ala
1001         290                 295                 300
1002 Phe Ala Glu Ala Phe Asn Thr Gln His Lys Ala Gly Phe Asp Ala Asn
1003 305                 310                 315                 320
1004 Gly Asp Ala Gly Glu Asp Phe Phe Ala Ile Gly Lys Pro Ala Val Leu
1005                 325                 330                 335
1006 Gln Asn Thr Lys Asn Lys Gly Asp Val Ala Ile Gly Ala Thr Val Thr
1007             340                 345                 350
E--> 1008 Asp Ala Ser Ala Val Leu Ala Thr Asp Tyr Lys Ile Ser Phe Asp Asn
1009             355                 360                 365
1010 Asn Gln Trp Gln Val Thr Arg Leu Ala Ser Asn Thr Thr Phe Thr Val
1011         370                 375                 380
1012 Thr Pro Asp Ala Asn Gly Lys Val Ala Phe Asp Gly Leu Glu Leu Thr
1013 385                 390                 395                 400
1014 Phe Thr Gly Thr Pro Ala Val Asn Asp Ser Phe Thr Leu Lys Pro Val
1015                 405                 410                 415
1016 Ser Asp Ala Ile Val Asn Met Asp Val Leu Ile Thr Asp Glu Ala Lys
1017             420                 425                 430
1018 Ile Ala Met Ala Ser Glu Glu Asp Ala Gly Asp Ser Asp Asn Arg Asn
1019             435                 440                 445
1020 Gly Gln Ala Leu Leu Asp Leu Gln Ser Asn Ser Lys Thr Val Gly Gly
1021         450                 455                 460
1022 Ala Lys Ser Phe Asn Asp Ala Tyr Ala Ser Leu Val Ser Asp Ile Gly
1023 465                 470                 475                 480
1024 Asn Lys Thr Ala Thr Leu Lys Thr Ser Ser Ala Thr Gln Gly Asn Val
```

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
1025                485                 490                 495
1026 Val Thr Gln Leu Ser Asn Gln Gln Gln Ser Ile Ser Gly Val Asn Leu
1027             500                 505                 510
1028 Asp Glu Glu Tyr Gly Asn Leu Gln Arg Phe Gln Gln Tyr Tyr Leu Ala
E--> 1029
   515                 520                 525                 Asn Ala Gln Val Leu Gln Thr Ala
1031 <210> SEQ ID NO: 41
1032 <211> LENGTH: 566
1033 <212> TYPE: PRT
1034 <213> ORGANISM: Pseudomonas aeruginosa
1036 <400> SEQUENCE: 41
1037 Met Asn Asp Ser Ile Gln Leu Ser Gly Leu Ser Arg Gln Leu Val Gln
1038  1               5                  10                  15
1039 Ala Asn Leu Leu Asp Glu Lys Thr Ala Leu Gln Ala Gln Thr Gln Ala
1040             20                  25                  30
1041 Gln Arg Asn Lys Leu Ser Leu Val Thr His Leu Val Gln Asn Lys Leu
1042         35                  40                  45
1043 Val Ser Gly Leu Ala Leu Ala Glu Leu Ser Ala Glu Gln Phe Gly Ile
1044     50                  55                  60
1045 Ala Tyr Cys Asp Leu Asn Ser Leu Asp Arg Glu Ser Phe Pro Arg Asp
1046 65                  70                  75                  80
1047 Ala Ile Ser Glu Lys Leu Val Arg Gln His Arg Val Ile Pro Leu Trp
1048                 85                  90                  95
1049 Arg Arg Gly Asn Lys Leu Phe Val Gly Ile Ser Asp Ala Ala Asn His
1050             100                 105                 110
1051 Gln Ala Ile Asn Asp Val Gln Phe Ser Thr Gly Leu Thr Thr Glu Ala
1052         115                 120                 125
1053 Ile Leu Val Glu Asp Asp Lys Leu Gly Leu Ala Ile Asp Lys Leu Phe
1054     130                 135                 140
1055 Glu Asn Ala Thr Asp Gly Leu Ala Gly Leu Asp Asp Val Asp Leu Glu
1056 145                 150                 155                 160
1057 Gly Leu Asp Val Gly Val Lys Glu Thr Ser Gly Gln Glu Asp Thr Gly
1058                 165                 170                 175
1059 Ala Glu Ala Asp Asp Ala Pro Val Val Arg Phe Val Asn Lys Met Leu
1060             180                 185                 190
1061 Leu Asp Ala Ile Lys Gly Gly Ser Ser Asp Leu His Phe Glu Pro Tyr
1062         195                 200                 205
1063 Glu Lys Ile Tyr Arg Val Arg Phe Arg Thr Asp Gly Met Leu His Glu
1064     210                 215                 220
1065 Val Ala Lys Pro Pro Ile Gln Leu Ala Ser Arg Ile Ser Ala Arg Leu
1066 225                 230                 235                 240
1067 Lys Val Met Ala Gly Leu Asp Ile Ser Glu Arg Arg Lys Pro Gln Asp
1068                 245                 250                 255
1069 Gly Arg Ile Lys Met Arg Val Ser Lys Thr Lys Ser Ile Asp Phe Arg
1070             260                 265                 270
1071 Val Asn Thr Leu Pro Thr Leu Trp Gly Glu Lys Ile Val Met Arg Ile
1072         275                 280                 285
1073 Leu Asp Ser Ser Ser Ala Gln Met Gly Ile Asp Ala Leu Gly Tyr Glu
1074     290                 295                 300
1075 Glu Asp Gln Lys Glu Leu Tyr Leu Ala Ala Leu Lys Gln Pro Gln Gly
```

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PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
1076 305                 310                 315                 320
1077 Met Ile Leu Val Thr Gly Pro Thr Gly Ser Gly Lys Thr Val Ser Leu
1078                 325                 330                 335
1079 Tyr Thr Gly Leu Asn Ile Leu Asn Thr Thr Asp Ile Asn Ile Ser Thr
1080             340                 345                 350
1081 Ala Glu Asp Pro Val Glu Ile Asn Leu Glu Gly Ile Asn Gln Val Asn
1082         355                 360                 365
1083 Val Asn Pro Arg Gln Gly Met Asp Phe Ser Gln Ala Leu Arg Ala Phe
1084     370                 375                 380
1085 Leu Arg Gln Asp Pro Asp Val Ile Met Val Gly Glu Ile Arg Asp Leu
1086 385                 390                 395                 400
1087 Glu Thr Ala Glu Ile Ala Ile Lys Ala Ala Gln Thr Gly His Met Val
1088                 405                 410                 415
1089 Met Ser Thr Leu His Thr Asn Ser Ala Ala Glu Thr Leu Thr Arg Leu
1090             420                 425                 430
1091 Leu Asn Met Gly Val Pro Ala Phe Asn Leu Ala Thr Ser Val Asn Leu
1092         435                 440                 445
1093 Ile Ile Ala Gln Arg Leu Ala Arg Lys Leu Cys Ser His Cys Lys Lys
1094     450                 455                 460
1095 Glu His Asp Val Pro Lys Glu Thr Leu Leu His Glu Gly Phe Pro Glu
1096 465                 470                 475                 480
1097 Glu Leu Ile Gly Thr Phe Lys Leu Tyr Ser Pro Val Gly Cys Asp His
1098                 485                 490                 495
1099 Cys Lys Asn Gly Tyr Lys Gly Arg Val Gly Ile Tyr Glu Val Val Lys
1100             500                 505                 510
1101 Asn Thr Pro Ala Leu Gln Arg Ile Ile Met Glu Glu Gly Asn Ser Ile
1102         515                 520                 525
E--> 1103 Glu Ile Ala Glu Gln Ala Arg Lys Glu Gly Phe Asn Asp Leu Arg Thr
E--> 1104 .
    530                 535                 540                 Ser Gly Leu Leu Lys Ala Met Gln
1106 <210> SEQ ID NO: 42
1107 <211> LENGTH: 406
1108 <212> TYPE: PRT
1109 <213> ORGANISM: Pseudomonas aeruginosa
1111 <400> SEQUENCE: 42
1112 Met Ala Asp Lys Ala Leu Lys Thr Ser Val Phe Ile Trp Glu Gly Thr
1113  1               5                  10                  15
1114 Asp Lys Lys Gly Ala Lys Val Lys Gly Glu Leu Thr Gly Gln Asn Pro
1115             20                  25                  30
1116 Met Leu Val Lys Ala His Leu Arg Lys Gln Gly Ile Asn Pro Leu Lys
1117         35                  40                  45
1118 Val Arg Lys Lys Gly Ile Ser Leu Leu Gly Ala Gly Lys Lys Val Lys
1119     50                  55                  60
1120 Pro Met Asp Ile Ala Leu Phe Thr Arg Gln Met Ala Thr Met Met Gly
1121 65                  70                  75                  80
1122 Ala Gly Val Pro Leu Leu Gln Ser Phe Asp Ile Ile Gly Glu Gly Phe
1123                 85                  90                  95
1124 Asp Asn Pro Asn Met Arg Lys Leu Val Asp Glu Ile Lys Gln Glu Val
1125             100                 105                 110
1126 Ser Ser Gly Asn Ser Leu Ala Asn Ser Leu Arg Lys Lys Pro Gln Tyr
```

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
1127          115                 120                 125
1128 Phe Asp Glu Leu Tyr Cys Asn Leu Val Asp Ala Gly Glu Gln Ser Gly
1129      130                 135                 140
1130 Ala Leu Glu Asn Leu Leu Asp Arg Val Ala Thr Tyr Lys Glu Lys Thr
1131 145                 150                 155                 160
1132 Glu Ser Leu Lys Ala Lys Ile Lys Lys Ala Met Thr Tyr Pro Ile Ala
1133                 165                 170                 175
1134 Val Ile Ile Val Ala Leu Ile Val Ser Ala Ile Leu Leu Ile Lys Val
1135             180                 185                 190
1136 Val Pro Gln Phe Gln Ser Val Phe Glu Gly Phe Gly Ala Glu Leu Pro
1137          195                 200                 205
1138 Ala Phe Thr Gln Met Ile Val Asn Leu Ser Glu Phe Met Gln Glu Trp
1139      210                 215                 220
1140 Trp Phe Phe Ile Ile Leu Ala Ile Ala Ile Phe Gly Phe Ala Phe Lys
1141 225                 230                 235                 240
1142 Glu Leu His Lys Arg Ser Gln Lys Phe Arg Asp Thr Leu Asp Arg Thr
1143                 245                 250                 255
1144 Ile Leu Lys Leu Pro Ile Phe Gly Gly Ile Val Tyr Lys Ser Ala Val
1145             260                 265                 270
1146 Ala Arg Tyr Ala Arg Thr Leu Ser Thr Thr Phe Ala Ala Gly Val Pro
1147          275                 280                 285
1148 Leu Val Asp Ala Leu Asp Ser Val Ser Gly Ala Thr Gly Asn Ile Val
1149      290                 295                 300
1150 Phe Lys Asn Ala Val Ser Lys Ile Lys Gln Asp Val Ser Thr Gly Met
1151 305                 310                 315                 320
1152 Gln Leu Asn Phe Ser Met Arg Thr Thr Ser Val Phe Pro Asn Met Ala
1153                 325                 330                 335
1154 Ile Gln Met Thr Ala Ile Gly Glu Glu Ser Gly Ser Leu Asp Glu Met
1155             340                 345                 350
1156 Leu Ser Lys Val Ala Ser Tyr Tyr Glu Glu Glu Val Asp Asn Ala Val
1157          355                 360                 365
1158 Asp Asn Leu Thr Thr Leu Met Glu Pro Met Ile Met Ala Val Leu Gly
E--> 1159
370                 375                 380
                                                    ↑ Val Leu Val Gly Gly Leu Ile Val
1161 <210> SEQ ID NO: 43
1162 <211> LENGTH: 290
1163 <212> TYPE: PRT
1164 <213> ORGANISM: Pseudomonas aeruginosa
1166 <400> SEQUENCE: 43
1167 Met Pro Leu Leu Asp Tyr Leu Ala Ser His Pro Leu Ala Phe Val Leu
1168  1               5                  10                  15
1169 Cys Ala Ile Leu Leu Gly Leu Leu Val Gly Ser Phe Leu Asn Val Val
1170             20                  25                  30
1171 Val His Arg Leu Pro Lys Met Met Glu Arg Asn Trp Lys Ala Glu Ala
1172          35                  40                  45
1173 Arg Glu Ala Leu Gly Leu Glu Pro Glu Pro Lys Gln Ala Thr Tyr Asn
1174      50                  55                  60
1175 Leu Val Leu Pro Asn Ser Ala Cys Pro Arg Cys Gly His Glu Ile Arg
1176 65                  70                  75                  80
1177 Pro Trp Glu Asn Ile Pro Leu Val Ser Tyr Leu Ala Leu Gly Gly Lys
```

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

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1178                85                  90                  95
1179 Cys Ser Ser Cys Lys Ala Ala Ile Gly Lys Arg Tyr Pro Leu Val Glu
1180             100                 105                 110
1181 Leu Ala Thr Ala Leu Leu Ser Gly Tyr Val Ala Trp His Phe Gly Phe
1182         115                 120                 125
1183 Thr Trp Gln Ala Gly Ala Met Leu Leu Leu Thr Trp Gly Leu Leu Ala
1184     130                 135                 140
1185 Met Ser Leu Ile Asp Ala Asp His Gln Leu Leu Pro Asp Val Leu Val
1186 145                 150                 155                 160
1187 Leu Pro Leu Leu Trp Leu Gly Leu Ile Ala Asn His Phe Gly Leu Phe
1188                165                 170                 175
1189 Ala Ser Leu Asp Asp Ala Leu Phe Gly Ala Val Phe Gly Tyr Leu Ser
1190             180                 185                 190
1191 Leu Trp Ser Val Phe Trp Leu Phe Lys Leu Val Thr Gly Lys Glu Gly
1192         195                 200                 205
1193 Met Gly Tyr Gly Asp Phe Lys Leu Leu Ala Met Leu Gly Ala Trp Gly
1194     210                 215                 220
1195 Gly Trp Gln Ile Leu Pro Leu Thr Ile Leu Leu Ser Ser Leu Val Gly
1196 225                 230                 235                 240
1197 Ala Ile Leu Gly Val Ile Met Leu Arg Leu Arg Asn Ala Glu Ser Gly
1198                245                 250                 255
1199 Thr Pro Ile Pro Phe Gly Pro Tyr Leu Ala Ile Ala Gly Trp Ile Ala
E--> 1200
       260                 265                 270
Leu Leu Trp Gly Asp Gln Ile Thr
1202 <210> SEQ ID NO: 44
1203 <211> LENGTH: 185
1204 <212> TYPE: PRT
1205 <213> ORGANISM: Pseudomonas aeruginosa
1207 <400> SEQUENCE: 44
1208 Met Leu Leu Lys Ser Arg His Arg Ser Leu His Gln Ser Gly Phe Ser
1209  1               5                  10                  15
1210 Met Ile Glu Val Leu Val Ala Leu Leu Leu Ile Ser Ile Gly Val Leu
1211             20                  25                  30
1212 Gly Met Ile Ala Met Gln Gly Lys Thr Ile Gln Tyr Thr Ala Asp Ser
1213         35                  40                  45
1214 Val Glu Arg Asn Lys Ala Ala Met Leu Gly Ser Asn Leu Leu Glu Ser
1215     50                  55                  60
1216 Met Arg Ala Ser Pro Lys Ala Leu Tyr Asp Val Lys Asp Gln Met Ala
1217 65                  70                  75                  80
1218 Thr Gln Ser Asp Phe Phe Lys Ala Lys Gly Ser Ala Phe Pro Thr Ala
1219                85                  90                  95
1220 Pro Ser Ser Cys Thr Pro Leu Pro Asp Ala Ile Lys Asp Arg Leu Gly
1221             100                 105                 110
1222 Cys Trp Ala Glu Gln Val Lys Asn Glu Leu Pro Gly Ala Gly Asp Leu
1223         115                 120                 125
1224 Leu Lys Ser Asp Tyr Tyr Ile Cys Arg Ser Ser Lys Pro Gly Asp Cys
1225     130                 135                 140
1226 Asp Gly Lys Gly Ser Met Leu Glu Ile Arg Leu Ala Trp Arg Gly Lys
1227 145                 150                 155                 160
E--> 1228
Gln Gly Ala Cys Val Asn Ala Ala Asp Ser Ser Ala Asp Thr Ser Leu
165
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PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

1230 <210> SEQ ID NO: 45
1231 <211> LENGTH: 274
1232 <212> TYPE: PRT
1233 <213> ORGANISM: Pseudomonas aeruginosa
1235 <400> SEQUENCE: 45
1236 Met Ser Met Asn Asn Arg Ser Arg Arg Gln Ser Gly Leu Ser Met Ile
1237 1 5 10 15
1238 Glu Leu Leu Val Ala Leu Ala Ile Ser Ser Phe Leu Ile Leu Gly Ile
1239 20 25 30
1240 Thr Gln Ile Tyr Leu Asp Asn Lys Arg Asn Tyr Leu Phe Gln Gln Gly
1241 35 40 45
1242 Gln Ala Gly Asn Gln Glu Asn Gly Arg Phe Ala Met Met Phe Leu Asp
1243 50 55 60
1244 Gln Gln Leu Ala Lys Val Gly Phe Arg Arg Arg Ala Asp Asp Pro Asn
1245 65 70 75 80
1246 Glu Phe Ala Phe Pro Ala Gln Gln Lys Thr Ala Tyr Cys Glu Ala Phe
1247 85 90 95
1248 Lys Ala Gly Ser Thr Leu Val Pro Ala Val Val Lys Ala Gly Gln Ser
1249 100 105 110
1250 Gly Phe Cys Tyr Arg Tyr Gln Pro Ala Pro Gly Glu Ala Tyr Asp Cys
1251 115 120 125
1252 Glu Gly Asn Ser Ile Thr Thr Pro Ser Asp Pro Phe Ala Thr Ala Gln
1253 130 135 140
1254 Ala Ile Thr Ala Arg Val Leu Phe Val Pro Ala Thr Ala Asp Val Pro
1255 145 150 155 160
1256 Gly Ser Leu Ala Cys Ser Ala Gln Thr Ile Lys Glu Lys Gly Gln Glu
1257 165 170 175
1258 Ile Val Ser Gly Leu Val Asp Phe Lys Leu Glu Tyr Gly Val Gly Pro
1259 180 185 190
1260 Thr Met Ala Gly Lys Arg Glu Val Glu Ser Phe Val Glu Gln Ala Asn
1261 195 200 205
1262 Ile Ala Asp Arg Pro Val Arg Ala Leu Arg Tyr Ser Ala Leu Met Ala
1263 210 215 220
1264 Ser Asp Lys Asn Leu Arg Gln Gly Asp Ser Lys Thr Leu Asp Asp Trp
1265 225 230 235 240
1266 Ile Thr Leu Tyr Pro Ser Ser Lys Thr Ser Leu Gln Gly Asn Asp Lys
E--> 1267
245 250 255 Asp Arg Leu Tyr Gln Ile Ala Lys
1269 <210> SEQ ID NO: 46
1270 <211> LENGTH: 172
1271 <212> TYPE: PRT
1272 <213> ORGANISM: Pseudomonas aeruginosa
1274 <400> SEQUENCE: 46
1275 Met Asn Asn Phe Pro Ala Gln Gln Arg Gly Ala Thr Leu Val Ile Ala
1276 1 5 10 15
1277 Leu Ala Ile Leu Val Ile Val Thr Leu Leu Ala Val Ser Ser Met Arg
1278 20 25 30
1279 Glu Val Val Leu Glu Ser Arg Ile Thr Gly Asn Val Ile Glu Gln Thr
1280 35 40 45
1281 Arg Leu Gln Asn Ala Ala Glu Ser Gly Leu Arg Glu Gly Glu Arg Arg

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
1282     50                  55                  60
1283 Phe Val Asn Thr Leu Arg Pro Pro Glu Pro Gly Thr Gly Cys Thr Ala
1284 65                  70                  75                  80
1285 Asp Asn Val Ala Arg Pro Cys Leu Leu Asp Leu Ala Ala Leu Asn Leu
1286                 85                  90                  95
1287 Lys Leu Ala Asp Thr His Gln Asn Pro Val Gly Val Leu Lys Gly Ile
1288             100                 105                 110
1289 Ala Asn Thr Trp Met Ser Tyr Arg Gly Ser Asp Ile Ser Ser Ala Thr
1290         115                 120                 125
1291 Thr Ala Gly Asn Ala Leu Gln Arg Ala Val Glu Gln Pro Ala His Ser
1292     130                 135                 140
E--> 1293
Leu Gly Arg Pro Gly Gln Arg Ser Gly Lys Pro Arg Ile Arg Gln Pro145                 150
1295 <210> SEQ ID NO: 47
1296 <211> LENGTH: 1161
1297 <212> TYPE: PRT
1298 <213> ORGANISM: Pseudomonas aeruginosa
1300 <400> SEQUENCE: 47
1301 Met Arg Gly Ile Gly Thr Phe Tyr Tyr Glu Thr Asn Ser Val Ala Arg
1302  1               5                  10                  15
1303 Asn Gln Thr Asn Ser Glu Thr Val Leu Gln Thr Val Ala Arg Pro Ser
1304             20                  25                  30
1305 Leu Tyr Gln Leu Ile Glu Pro Arg Met Lys Ser Val Leu His Gln Ile
1306         35                  40                  45
1307 Gly Lys Thr Ser Leu Ala Ala Ala Leu Ser Gly Ala Val Leu Leu Ser
1308     50                  55                  60
1309 Ala Gln Thr Thr His Ala Ala Ala Leu Ser Val Ser Gln Gln Pro Leu
1310 65                  70                  75                  80
1311 Met Leu Ile Gln Gly Val Ala Pro Asn Met Leu Val Thr Leu Asp Asp
1312                 85                  90                  95
1313 Ser Gly Ser Met Ala Phe Ala Tyr Ala Pro Asp Ser Ile Ser Gly Tyr
1314             100                 105                 110
1315 Gly Asn Tyr Thr Phe Phe Ala Ser Asn Ser Phe Asn Pro Met Tyr Phe
1316         115                 120                 125
1317 Asp Pro Asn Thr Gln Tyr Lys Leu Pro Lys Lys Leu Thr Leu Val Asn
1318     130                 135                 140
1319 Gly Gln Val Gln Ile Gln Asp Tyr Pro Ala Pro Asn Phe Ser Ser Ala
1320 145                 150                 155                 160
1321 Trp Arg Asn Gly Phe Thr Arg Arg Gly Ser Ile Asn Leu Ser Asn Ser
1322                 165                 170                 175
1323 Tyr Lys Val Thr Ile Glu Tyr Gly Arg Gly Tyr Asp Lys Glu Ser Thr
1324             180                 185                 190
1325 Ile Lys Ala Asp Ala Ala Tyr Tyr Tyr Asp Phe Thr Gly Ser Ser Ser
1326         195                 200                 205
1327 Trp Asn Arg Thr Asn Gln Ala Cys Tyr Thr Arg Arg Tyr Val Ser Thr
1328     210                 215                 220
1329 Glu Gln Arg Gln Asn Phe Ala Asn Trp Tyr Ser Phe Tyr Arg Thr Arg
1330 225                 230                 235                 240
1331 Ala Leu Arg Thr Gln Thr Ala Ala Asn Leu Ala Phe Phe Arg Leu Pro
1332                 245                 250                 255
```

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
1333 Glu Asn Ala Arg Val Ser Trp Gln Leu Leu Asn Asp Ser Asn Cys Asn
1334             260                 265                 270
1335 Gln Met Gly Ser Gly Ser Arg Leu Arg Gln Leu Phe Gln Gln Leu Ser
1336         275                 280                 285
1337 Thr Gly Leu His Arg Ser Thr Ala Gly Glu Leu Leu Gln Leu Ala Gly
1338     290                 295                 300
1339 Lys Thr Phe Gly Gln Trp Trp Tyr Ala Leu Arg Gln Ala Met Thr Arg
1340 305                 310                 315                 320
1341 Glu Ala Ser Phe Ser Arg Arg Pro Ala Ser Asn Gly Pro Tyr Ala Tyr
1342                 325                 330                 335
1343 Arg Pro Gly Thr Gln Thr Ala Pro Glu Tyr Ser Cys Arg Gly Ser Tyr
1344             340                 345                 350
1345 His Ile Leu Met Thr Asp Gly Leu Trp Asn Asn Asp Ser Ala Asn Val
1346         355                 360                 365
1347 Gly Asn Ala Asp Ser Thr Ala Arg Asn Leu Pro Asp Gly Lys Ser Tyr
1348     370                 375                 380
1349 Ser Ser Gln Thr Pro Tyr Arg Asp Gly Thr Phe Asp Thr Leu Ala Asp
1350 385                 390                 395                 400
1351 Gln Ala Phe His Tyr Trp Ala Thr Asp Ala Arg Pro Asp Ile Asp Asp
1352                 405                 410                 415
1353 Asn Ile Lys Pro Tyr Ile Pro Tyr Pro Asp Gln Asp Asn Pro Ser Gly
1354             420                 425                 430
1355 Glu Tyr Trp Asn Pro Arg Asn Asp Pro Ala Ile Trp Gln His Met Val
1356         435                 440                 445
1357 Thr Tyr Thr Leu Gly Leu Gly Leu Asn Thr Ser Leu Thr Ser Pro Arg
1358     450                 455                 460
1359 Trp Glu Gly Ser Thr Phe Ser Gly Gly Tyr Asn Asp Ile Val Ala Gly
1360 465                 470                 475                 480
1361 Asn Leu Ser Trp Pro Arg Ala Ser Asn Asn Asp Ser Asn Asn Val Tyr
1362                 485                 490                 495
1363 Asp Leu Trp His Ala Ala Val Asn Ser Arg Gly Glu Phe Phe Ser Ala
1364             500                 505                 510
1365 Asp Ser Pro Asp Gln Leu Val Ala Ala Phe Gln Asp Ile Leu Asn Arg
1366         515                 520                 525
1367 Ile Ser Gly Lys Asp Leu Pro Ala Ser Arg Pro Ala Ile Ser Ser Ser
1368     530                 535                 540
1369 Leu Gln Glu Asp Asp Thr Gly Asp Lys Leu Thr Arg Phe Ala Tyr Gln
1370 545                 550                 555                 560
1371 Thr Ser Phe Ala Ser Asp Lys Asn Trp Ala Gly Asp Leu Thr Arg Tyr
1372                 565                 570                 575
1373 Ser Leu Thr Thr Gln Asp Lys Ala Thr Val Gln Thr Asn Leu Trp Ser
1374             580                 585                 590
1375 Ala Gln Ser Ile Leu Asp Ala Met Pro Asn Gly Gly Ala Gly Arg Lys
1376         595                 600                 605
1377 Ile Met Met Ala Gly Ser Gly Thr Ser Gly Leu Lys Glu Phe Thr Trp
1378     610                 615                 620
1379 Gly Ser Leu Ser Ala Asp Gln Gln Arg Lys Leu Asn Arg Asp Pro Asp
1380 625                 630                 635                 640
1381 Arg Asn Asp Val Ala Asp Thr Lys Gly Gln Asp Arg Val Ala Phe Leu
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RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
1382                645                 650                 655
1383 Arg Gly Asp Arg Arg Lys Glu Asn Ser Asp Asn Phe Arg Thr Arg Asn
1384             660                 665                 670
1385 Ser Ile Leu Gly Asp Ile Ile Asn Ser Ser Pro Ala Thr Val Gly Lys
1386         675                 680                 685
1387 Ala Gln Tyr Leu Thr Tyr Leu Ala Gln Pro Ile Glu Pro Ser Gly Asn
1388     690                 695                 700
1389 Tyr Ser Thr Phe Ala Glu Ala Gln Lys Thr Arg Ala Pro Arg Val Tyr
1390 705                 710                 715                 720
1391 Val Gly Ala Asn Asp Gly Met Leu His Gly Phe Asp Thr Asp Gly Asn
1392                725                 730                 735
1393 Glu Thr Phe Ala Phe Ile Pro Ser Ala Val Phe Glu Lys Leu His Lys
1394             740                 745                 750
1395 Leu Thr Ala Arg Gly Tyr Gln Gly Gly Ala His Gln Phe Tyr Val Asp
1396         755                 760                 765
1397 Gly Ser Pro Val Val Ala Asp Ala Phe Phe Gly Gly Ala Trp His Thr
1398     770                 775                 780
1399 Val Leu Ile Gly Ser Leu Arg Ala Gly Gly Lys Gly Leu Phe Ala Leu
1400 785                 790                 795                 800
1401 Asp Val Thr Asp Pro Ala Asn Ile Lys Leu Leu Trp Glu Ile Gly Val
1402                805                 810                 815
1403 Asp Gln Glu Pro Asp Leu Gly Tyr Ser Phe Pro Lys Pro Thr Val Ala
1404             820                 825                 830
1405 Arg Leu His Asn Gly Lys Trp Ala Val Val Thr Gly Asn Gly Tyr Ser
1406         835                 840                 845
1407 Ser Leu Asn Asp Lys Ala Ala Leu Leu Ile Ile Asp Leu Glu Thr Gly
1408     850                 855                 860
1409 Ala Ile Thr Arg Lys Leu Glu Val Thr Gly Arg Thr Gly Val Pro Asn
1410 865                 870                 875                 880
1411 Gly Leu Ser Ser Leu Arg Leu Ala Asp Asn Asn Ser Asp Gly Val Ala
1412                885                 890                 895
1413 Asp Tyr Ala Tyr Ala Gly Asp Leu Gln Gly Asn Leu Trp Arg Phe Asp
1414             900                 905                 910
1415 Leu Ile Ala Gly Lys Val Asn Gln Asp Asp Pro Phe Ser Arg Ala Asn
1416         915                 920                 925
1417 Asp Gly Pro Thr Val Ala Ser Ser Phe Arg Val Ser Phe Gly Gly Gln
1418     930                 935                 940
1419 Pro Leu Tyr Ser Ala Val Asp Ser Ala Gly Ala Ala Gln Ala Ile Thr
1420 945                 950                 955                 960
1421 Ala Ala Pro Ser Leu Val Arg His Pro Thr Arg Lys Gly Tyr Ile Val
1422                965                 970                 975
1423 Ile Phe Gly Thr Gly Lys Tyr Phe Glu Asn Ala Asp Ala Arg Ala Asp
1424             980                 985                 990
1425 Thr Ser Arg Ala Gln Thr Leu Tyr Gly Ile Trp Asp Gln Gln Thr Lys
1426         995                 1000                1005
1427 Gly Glu Ala Ala Gly Ser Thr Pro Arg Leu Thr Arg Gly Asn Leu Gln
1428     1010                1015                1020
1429 Gln Gln Thr Leu Asp Leu Gln Ala Asp Ser Thr Phe Ala Ser Thr Ala
E--> 1430 1025                1030                1035                1040
```

RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

```
1431 Arg Thr Ile Arg Ile Gly Ser Gln Asn Pro Val Asn Trp Leu Asn Asn
1432                 1045                1050                1055
1433 Asp Gly Ser Thr Lys Gln Ser Gly Trp Tyr Leu Asp Phe Met Val Asn
1434             1060                1065                1070
1435 Gly Thr Leu Lys Gly Glu Met Leu Ile Glu Asp Met Ile Ala Ile Gly
1436         1075                1080                1085
1437 Gln Val Val Leu Leu Gln Thr Ile Thr Pro Asn Asp Asp Pro Cys Ala
1438     1090                1095                1100
1439 Asp Gly Ala Ser Asn Trp Thr Tyr Gly Leu Asp Pro Tyr Thr Gly Gly
E--> 1440 1105                1110                1115                112 //20
1441 Arg Thr Arg Phe Thr Val Phe Asp Leu Gly Arg Gln Gly Val Val Gly
1442                 1125                1130                1135
E--> 1443
Leu Glu Ile Arg Leu Thr Gly Thr Thr Arg Arg Asn Val Gly Asn Pro      1140
1445 <210> SEQ ID NO: 48
1446 <211> LENGTH: 115
1447 <212> TYPE: PRT
1448 <213> ORGANISM: Pseudomonas aeruginosa
1450 <400> SEQUENCE: 48
1451 Met Lys Val Leu Pro Met Leu Leu Ala Leu Ala Val Pro Gly Leu Cys
1452  1               5                  10                  15
1453 Trp Ala Glu Asp Pro Gln Thr Phe Glu Gly Ala Gly Val Val Phe Glu
1454             20                  25                  30
1455 Val Gln Val Glu Lys Asn Leu Val Asp Ile Asp His Arg Leu Tyr Arg
1456         35                  40                  45
1457 Leu Pro Asn Ser Thr Val Arg Asn Gly Met Pro Ser Leu Phe Gln Val
1458     50                  55                  60
1459 Lys Pro Gly Ser Val Val Ser Tyr Ser Gly Thr Val Ser Gln Pro Trp
1460 65                  70                  75                  80
1461 Ser Thr Ile Thr Asp Ile Tyr Ile His Lys Gln Met Ser Glu Gln Glu
E--> 1462
             85                  90                  95
Leu Ala Glu Met Ile Glu Lys Glu
1464 <210> SEQ ID NO: 49
1465 <211> LENGTH: 141
1466 <212> TYPE: PRT
1467 <213> ORGANISM: Pseudomonas aeruginosa
1469 <400> SEQUENCE: 49
1470 Met Arg Thr Arg Gln Lys Gly Phe Thr Leu Leu Glu Met Val Val Val
1471  1               5                  10                  15
1472 Val Ala Val Ile Gly Ile Leu Leu Gly Ile Ala Ile Pro Ser Tyr Gln
1473             20                  25                  30
1474 Asn Tyr Val Ile Arg Ser Asn Arg Thr Glu Gly Gln Ala Leu Leu Ser
1475         35                  40                  45
1476 Asp Ala Ala Ala Arg Gln Glu Arg Tyr Tyr Ser Gln Asn Pro Gly Val
1477     50                  55                  60
1478 Gly Tyr Thr Lys Asp Val Ala Lys Leu Gly Met Ser Ser Ala Asn Ser
1479 65                  70                  75                  80
1480 Pro Asn Asn Leu Tyr Asn Leu Thr Ile Ala Thr Pro Thr Ser Thr Thr
1481                 85                  90                  95
E--> 1482 Tyr Thr Leu Thr Ala Thr Pro Ile Asn Ser Gln Thr Arg Asp Lys Thr
1483             100                 105                 110
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RAW SEQUENCE LISTING DATE: 05/15/2002
PATENT APPLICATION: US/09/673,605A TIME: 15:51:19

Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

E--> 1484
Cys Gly Lys Leu Thr Leu Asn Gln Leu Gly Glu Arg Gly Ala Ala Gly
115 120

VERIFICATION SUMMARY DATE: 05/15/2002
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Input Set : A:\00246.505003.SEQLIST.TXT
Output Set: N:\CRF3\05152002\I673605A.raw

L:35 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0
L:36 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:60
L:37 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:120
L:38 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:180
L:39 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:240
L:41 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:360
L:42 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:420
L:43 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:480
L:44 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:540
L:45 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:600
L:46 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:660
L:47 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:720
L:48 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:780
L:49 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:840
L:50 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:900
L:51 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:960
L:52 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:1020
L:53 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:1080
L:66 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:0
L:67 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:60
L:68 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:120
L:69 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:180
L:70 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:240
L:83 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:0
L:84 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:60
L:85 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:120
L:86 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:180
L:87 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:240
L:88 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:300
L:89 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:360
L:90 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:420
L:91 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:480
L:92 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:540
L:93 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:600
L:94 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:660
L:95 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:720
L:96 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:780
L:109 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0
L:114 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:300
L:115 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:360
L:116 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:420
L:117 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:480
L:118 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:540
L:119 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:600
L:120 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:660
L:121 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:720
L:122 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:780
L:135 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:0

VERIFICATION SUMMARY DATE: 05/15/2002
PATENT APPLICATION: **US/09/673,605A** TIME: 15:51:20

Input Set : **A:\00246.505003.SEQLIST.TXT**
Output Set: **N:\CRF3\05152002\I673605A.raw**

L:136 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:60
L:137 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:120
L:623 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:26
L:767 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:34
L:767 M:252 E: No. of Seq. differs, <211> LENGTH:Input:595 Found:576 SEQ:34
L:786 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:35
L:786 M:252 E: No. of Seq. differs, <211> LENGTH:Input:119 Found:96 SEQ:35
L:827 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:36
L:827 M:252 E: No. of Seq. differs, <211> LENGTH:Input:295 Found:272 SEQ:36
L:870 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:37
L:870 M:252 E: No. of Seq. differs, <211> LENGTH:Input:308 Found:288 SEQ:37
L:905 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:38
L:905 M:252 E: No. of Seq. differs, <211> LENGTH:Input:245 Found:224 SEQ:38
L:956 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:39
L:956 M:252 E: No. of Seq. differs, <211> LENGTH:Input:375 Found:352 SEQ:39
L:1029 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:40
L:1029 M:252 E: No. of Seq. differs, <211> LENGTH:Input:547 Found:528 SEQ:40
L:1104 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:41
L:1104 M:252 E: No. of Seq. differs, <211> LENGTH:Input:566 Found:544 SEQ:41
L:1159 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:42
L:1159 M:252 E: No. of Seq. differs, <211> LENGTH:Input:406 Found:384 SEQ:42
L:1200 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:43
L:1200 M:252 E: No. of Seq. differs, <211> LENGTH:Input:290 Found:272 SEQ:43
L:1228 M:252 E: No. of Seq. differs, <211> LENGTH:Input:185 Found:160 SEQ:44
L:1267 M:252 E: No. of Seq. differs, <211> LENGTH:Input:274 Found:256 SEQ:45
L:1293 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:46
L:1293 M:333 E: Wrong sequence grouping, Amino acids not in groups!
L:1293 M:330 E: (2) Invalid Amino Acid Designator, NUMBER OF INVALID KEYS:1
L:1293 M:252 E: No. of Seq. differs, <211> LENGTH:Input:172 Found:171 SEQ:46
L:1430 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:47
M:332 Repeated in SeqNo=47
L:1443 M:252 E: No. of Seq. differs, <211> LENGTH:Input:1161 Found:1136 SEQ:47
L:1462 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:48
L:1462 M:252 E: No. of Seq. differs, <211> LENGTH:Input:115 Found:96 SEQ:48
L:1484 M:360 E: Sequence data overflow, line data truncated, for SEQ ID#:49
L:1484 M:252 E: No. of Seq. differs, <211> LENGTH:Input:141 Found:112 SEQ:49